

US-PAT-NO: 6291265  
 DOCUMENT-IDENTIFIER: US 6291265 B1  
 TITLE: Method of manufacturing an interposer  
 DATE-ISSUED: September 18, 2001  
 INVENTOR-INFORMATION:  
 NAME CITY STATE ZIP CODE  
 COUNTRY  
 Mess; Leonard E. Boise ID N/A  
 N/A  
 ASSIGNEE INFORMATION:  
 NAME CITY STATE ZIP CODE  
 COUNTRY TYPE CODE  
 Micron Technology, Inc. Boise ID N/A  
 N/A 02

APPL-NO: 9/ 501034

DATE FILED: February 9, 2000

PARENT-CASE:

RELATED APPLICATIONS This is a divisional application of U.S. patent

application Ser. No. 09/123,633, filed on Jul. 28, 1998, titled "THERMALLY

CONDUCTIVE INTERPOSER AND METHOD" which is incorporated herein by reference.

INT-CL: [7] H01L021/24

US-CL-ISSUED: 438/107,438/112

US-CL-CURRENT: 438/107,438/112

FIELD-OF-SEARCH: 438/107;438/112

REF-CITED:

PAT-NO	ISSUE-DATE	U.S. PATENT DOCUMENTS PATENTEE-NAME	US-CL
3354394	November 1967	James	361/761
4450314	May 1984	Huther	29/573
4697143	September 1987	Lockwood et al.	324/754
4961052	October 1990	Tada et al.	324/754
5016138	May 1991	Woodman	361/381
5346751	September 1994	Lau et al.	428/210
5519332	May 1996	Wood et al.	324/755
5530376	June 1996	Lim et al.	324/765
5578934	November 1996	Wood et al.	324/755
5678301	October 1997	Gochmour et al.	29/827
5693980	December 1997	Sugahara	257/706
5915755	June 1999	Gochmour et al.	29/843
6037957	May 2000	Grande et al.	347/147

ART-UNIT: 283

PRIMARY-EXAMINER: Bowers; Charles

ASSISTANT-EXAMINER: Brewster; William M.

ATTY-AGENT-FIRM: Workman, Nydegger & Seeley

ABSTRACT:

An interposer for electrically coupling a semiconductive device to an electrical apparatus includes (i) a substrate comprised of an electrically insulating, thermally conductive ceramic material; and (ii) an electrical conductor on the substrate having a receiving end for connecting to a semiconductive device and a terminal end for connecting to an electrical apparatus. The semiconductive device is electrically coupled to the electrical apparatus when the semiconductive device is connected to the receiving end of the electrical conductor and the terminal end of the electrical conductor is connected to the electrical apparatus. A thermally conductive connector connects the semiconductive device to the interposer. The thermally conductive interposer and connector conduct heat from the semiconductive device to the environment, thereby protecting the semiconductive device from overheating.

24 Claims, 9 Drawing figures

US-PAT-NO: 6288559  
DOCUMENT-IDENTIFIER: US 6288559 B1  
TITLE: Semiconductor testing using electrically conductive adhesives

DATE-ISSUED: September 11, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE
COUNTRY			
Bernier; William E.	Endwell	NY	N/A
N/A			
Gaynes; Michael A.	Vestal	NY	N/A
N/A			
Howell; Wayne J.	Williston	VT	N/A
N/A			
Pierson; Mark V.	Binghamton	NY	N/A
N/A			
Trivedi; Ajit K.	Endwell	NY	N/A
N/A			
Woychik; Charles G.	Vestal	NY	N/A
N/A			

ASSIGNEE INFORMATION:

NAME	CITY	STATE	ZIP CODE
COUNTRY			
TYPE CODE			
International Business	Armonk	NY	N/A
N/A			
02			

Machines Corporation

APPL-NO: 9/ 050820

DATE FILED: March 30, 1998

PARENT-CASE:

RELATED APPLICATION The present invention is related to U.S. patent application Ser. No. 08/709,375 titled "Computer System With

Photomask Screened Joining Material And Process," filed on Sep. 6, 1996

(now U.S. Pat. No. 5,759,737) on behalf of M. Pierson et al., assigned to the assignee of the

present application, and incorporated herein by reference.

INT-CL: [7] G01R031/02

US-CL-ISSUED: 324/755,324/765

US-CL-CURRENT: 324/755,324/765

FIELD-OF-SEARCH: 324/755;324/765 ;324/760 ;324/158.1 ;324/73.1 ;438/14 ;438/17 ;438/18 ;257/40 ;257/48

REF-CITED:

PAT-NO

ISSUE-DATE

U.S. PATENT DOCUMENTS  
PATENTEE-NAME

US-CL

4811081	March 1989	Lyden	N/A
5007163	April 1991	Pope et al.	29/840
5086558	February 1992	Grube et al.	N/A
5420520	May 1995	Anschel et al.	324/754
5440239	August 1995	Zappella et al.	N/A
5508228	April 1996	Nolan et al.	N/A
5543585	August 1996	Booth et al.	N/A
5543724	August 1996	Christopher	324/754
5545465	August 1996	Gaynes et al.	N/A
5578527	November 1996	Chang et al.	N/A
5578934	November 1996	Wood et al.	N/A
5611884	March 1997	Bearinger et al.	N/A
5625298	April 1997	Hirano et al.	N/A

FOREIGN PATENT DOCUMENTS		
COUNTRY	FOREIGN-PAT-NO	PUBN-DATE
US-CL		
JP	5-136146	June 1993
JP	5-326629	December 1993
JP	5-326628	December 1993
JP	6-275678	September 1994
JP	9-36119	February 1997

ART-UNIT: 288

PRIMARY-EXAMINER: Nguyen; Vinh P.

ATTY-AGENT-FIRM: Ratner & Prestia Fraley, Esq.; Lawrence R.

ABSTRACT:

A method and device for testing and burning-in semiconductor circuits. The method and device permit the entire wafer to be tested by temporarily attaching the wafer to a test substrate using electrically conductive adhesive (ECA). The ECA conforms to deviations from co-planarity of the contact points of both the wafer and test substrate while providing a quality electrical connection at each point. ECA material can be deposited on either the wafer contacts or the substrate pads. In addition, the ECA may be deposited on C4 bumps or tin-capped lead bases. Variations in the method and device include filling vias of a non-conductive interposer with ECA. The electrical connection may be enhanced by forming conductive dendrites on test pads while the ECA is deposited on the wafer contacts. To further enhance the electrical connection, the ECA material can be plasma etched to remove some of its polymer matrix and

to expose the electrically conductive particles on one side and then plating with palladium. After the palladium-plated ECA is brought into contact with aluminum pads, palladium-coated aluminum pads, or even C4 solder bumps, conductive dendrites are formed on the palladium-treated ECA bumps.

17 Claims, 14 Drawing figures

US-PAT-NO: 6282823  
 DOCUMENT-IDENTIFIER: US 6282823 B1  
 TITLE: Driver courtesy device  
 DATE-ISSUED: September 4, 2001  
 INVENTOR-INFORMATION:  
 NAME CITY STATE ZIP CODE  
 COUNTRY  
 Brown; Leo Boca Raton FL 33434  
 N/A  
 APPL-NO: 9/ 728521  
 DATE FILED: December 1, 2000  
 PARENT-CASE:  
 This application claims benefit to Provisional Application  
 60/169,047 filed  
 Dec. 3, 1999.  
 INT-CL: [7] G09F021/04  
 US-CL-ISSUED: 40/593,74/47 ,40/218  
 US-CL-CURRENT: 40/593,40/218 ,74/47  
 FIELD-OF-SEARCH: 40/593;40/591 ;40/218 ;40/423 ;40/492 ;74/47

REF-CITED:

PAT-NO	ISSUE-DATE	U.S. PATENT DOCUMENTS PATENTEE-NAME	US-CL
288778	November 1883	Davis	74/47
851731	April 1907	Daley	74/47
2147010	February 1939	Cranford	N/A
2714266	August 1955	Jauquet	N/A
2817916	December 1957	Yarrow	N/A
3678457	July 1972	Lev	N/A
4176483	December 1979	Bailey	N/A
5450811	September 1995	Heiland	N/A
5628133	May 1997	Cooper	40/591

ART-UNIT: 368

PRIMARY-EXAMINER: Silbermann; Joanne

ATTY-AGENT-FIRM: Downey, P.A.; Robert M.

ABSTRACT:

A driver courtesy device includes a first unit attachable to the dashboard or steering console of an automobile, within reach of the driver of the automobile, and a display unit mounted adjacent the rear window or one of the side windows of the automobile. The first unit includes a signal transmitter actuated by the driver. The display unit includes an upstanding member resembling an arm and hand, a signal receiver, and a motor actuated for a

predetermined operational period upon receipt of the signal transmitted by the first unit. An interposer converts rotary motion of the actuated motor to linear motion to thereby move the arm and hand in a reciprocating, waving motion to convey a courteous gesture.

7 Claims, 7 Drawing figures